Space Weather Forecast

Issued on Thursday, 28 September 2023 at 13:23 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Ongoing chance of isolated Moderate-flares (R1-R2 Radio blackouts). A chance of G1-G2 (Minor to Moderate) geomagnetic storms on Day 4 (01 Oct).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has increased to Moderate levels with a single low-level Moderate flare observed from a new sunspot region in the far southeast of the disc.

There are currently eight sunspot regions on the visible disc, with five of these located in the western hemisphere. The most active sunspot group lies in the southeast quadrant; a small to moderately sized, but still magnetically rather simple region. Previously more active groups in the northwest have shown signs of slight decay. Another small to moderately region in the northeast has developed slowly during the period, but again, remains rather small and magnetically simple. All other regions are small and/or magnetically simple at this time.

No potential Earth-directed Coronal Mass Ejections (CMEs) have been observed in the past 24hrs.

Solar Wind / Geomagnetic Activity: Solar winds as observed at DSCOVR/ACE has shown a general, but erratic decline during the period, falling from Slightly Elevated to background levels, with a brief peak at Elevated speeds of 507 km/s at 27/1945 UTC. Density was largely below average. The Interplanetary magnetic field (IMF) was weak, with the important north-south component also weakly variable. Resultant geomagnetic activity was Quiet to Unsettled (Kp0-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels, with no Solar Radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Activity is expected to remain at Low to Moderate levels, with further isolated Moderate-class flares possible, mainly from the active regions in the eastern disc.

Solar Wind / Geomagnetic Activity: A possible glance from weak Coronal Mass Ejection (CME) arrivals cannot be ruled out on Days 1 and 3 (27 and 29 Sep), however this is deemed very low confidence. Otherwise no CMEs feature in the current forecast period.

Solar winds are currently at background levels, perhaps increasing to Slightly Elevated speeds between Days 1-3 (28-30 Sep) due to minor coronal hole influences. A more significant, recurrent coronal hole is anticipated to arrive at Earth from Day 4 (01 Oct) or perhaps the following day.

Geomagnetic activity is expected to be largely Quiet to Unsettled, with a slight chance of Active intervals on Day 1 (28 Sep) and on Day 3 (30 Sep). From Day 4 (01 Oct) activity may increase to Unsettled to Active levels with a chance of G1-G2/Minor-Moderate Storm (Kp5-6) intervals.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background levels, but with a very slight chance of minor Solar Radiation storms.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.

Met Office

Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	5	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	25	25	25	25
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.